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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/812,747	03/29/2004	Kazuo Kasai	20110/0200839-US0	5489
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DARBY & DARBY P.C.
P. O. BOX 5257
NEW YORK, NY 10150-5257

EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,747

Applicant(s)

KASAI ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/29/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group II, claims 15-24 in the reply filed on March 22, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 15-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. All independent claims recite "means for reducing pressure" clause invoking a 112, 6th paragraph analysis as provided below. However, the Examiner's evaluation of Applicant's specification does not provide any teaching, whatsoever, in support thereof for a complete analysis under 112, 6th. Because of this, the Examiner cannot discern equivalents to Applicant's "means for reducing pressure".

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5. Claims 15-24 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Applicant's process control steps (Figure 2) critical or essential to the practice of the invention, but not included in the claims is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). How do the algorithms and logic claimed such as "wherein said gas flow controlling means supplies a large amount of said protective film forming gas to said etching chamber when said etching gas is not being supplied and a small amount of said protective film forming gas to said etching chamber when said etching gas is being supplied" – claim 15 control/alter/influence the claimed apparatus parts? Is the logic pre-programmed and responsive to unshown sensors?

6. Claims 15-24 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: How do the algorithms and logic claimed such as described above control/alter/influence the claimed apparatus parts? Is the logic pre-programmed and responsive to unshown sensors?

7. Claims 15-24 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: How do the algorithms and logic claimed such as described above control/alter/influence the claimed apparatus parts? Is the logic pre-programmed and responsive to unshown sensors or are these recipe steps?

8. Claims 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 15 requires "...means for applying high-frequency electrical base.."

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correction is required. Claim 15 requires “means for controlling electrical coil” correction is required.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 15-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii ('942); Nobuo (US 5685942 A) in view of Ishii; Nobuo (US 5529657 A). Ishii ('942) teaches a device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) comprising: an etching chamber (2; Figure 1) for housing a silicon substrate (W; Figure 1) serving as an item to be etched; a base (4; Figure 1; column 3, lines 36-50) disposed below (compare with Applicant's Figure 1) said etching chamber (2; Figure 1) and on which said silicon substrate (W; Figure 1) is mounted;

means for supplying an etching gas to said etching chamber (2; Figure 1)

Support for this portion of claim 15 is found in section [0052]. Specifically, the specification teaches:

“

The control device 20 is formed from: gas flow-control means 21 controlling the mass-flow controllers 11, 12 to adjust the flow of gas supplied by the gas cylinders 9, 10 to the etching chamber 2a; coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means 22

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controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) 16; and base power controlling means 23 controlling the high-frequency power applied to the base 3.

“

Ishii ('942) teaches:

- i. The control device (56; Figure 1; column 5; lines 32-42) is formed from: gas flow-control means (56, 37-42, 44-47; Figure 1; column 5; lines 13-43) controlling the mass-flow controllers (39, 40, 46, and 47; Figure 1; column 5; lines 13-43) to adjust the flow of gas supplied by the gas cylinders (41, 42; Figure 1; column 5; lines 13-17) to the etching chamber (2; Figure 1); coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (56, 7, 8, 6, 6a,b; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) (6, 6a,b; Figure 1; column 3, lines 51-57); and base power controlling means (56, 24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power (24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) applied to the base (4; Figure 1; column 3, lines 36-50). As such, Ishii ('942) teaches an equivalent apparatus that performs the function of means for supplying an etching gas to said etching chamber. As a result, Ishii ('942)'s prior art elements of (see above) for means for supplying an etching gas to said etching chamber perform the identical function of supplying an etching gas to said etching chamber in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183) – claim 15

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- ii. means for supplying a protective film forming gas to said etching chamber (2; Figure 1).
Support for this portion of claim 15 is found in section [0052]. Specifically, the specification teaches: [0052] “The control device 20 is formed from: gas flow-control means 21 controlling the mass-flow controllers 11, 12 to adjust the flow of gas supplied by the gas cylinders 9, 10 to the etching chamber 2a; coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means 22 controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) 16; and base power controlling means 23 controlling the high-frequency power applied to the base 3. “ Ishii ('942) teaches: The control device (56; Figure 1; column 5; lines 32-42) is formed from: gas flow-control means (56, 37-42, 44-47; Figure 1; column 5; lines 13-43) controlling the mass-flow controllers (39, 40, 46, and 47; Figure 1; column 5; lines 13-43) to adjust the flow of gas supplied by the gas cylinders (41, 42; Figure 1; column 5; lines 13-17) to the etching chamber (2; Figure 1); coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (56, 7, 8, 6, 6a,b; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) (6, 6a,b; Figure 1; column 3, lines 51-57); and base power controlling means (56, 24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power (24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) applied to the base (4; Figure 1; column 3, lines 36-50). As such, Ishii ('942) teaches an equivalent apparatus that performs the function of means for supplying a protective film forming gas to said etching chamber. As a result, Ishii ('942)'s prior art elements of (see above) for means for supplying a protective film forming gas to said etching chamber perform the

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identical function of supplying a protective film forming gas to said etching chamber in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183) – claim 15. Applicant's claim requirement of "a protective film forming gas" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

- iii. means for reducing pressure in said etching chamber (2; Figure 1). No Support for this portion of claim 1 is found in the specification. Ishii ('942) teaches an equivalent apparatus (56, 37-42, 44-47, 57, 52; Figure 1; column 5; lines 33-43, 22-28) that performs the function of means for reducing pressure. As a result, Ishii ('942)'s prior art elements of (56, 37-42, 44-47, 57, 52) for means for reducing pressure perform the identical function of reducing pressure in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183) – claim 15
- iv. means for generating plasma, including a coil (6, 6a, 6b; Figure 1; column 3; lines 51-58) and opposing (compare Applicant's Figure 1 with Figure 1 of Ishii ('942)) said etching

chamber (2; Figure 1), wherein high-frequency electrical power is applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58), and the etching gas and the protective film forming gas supplied to said etching chamber (2; Figure 1) are converted to plasma. Support for this portion of claim is found in section [0052]. Specifically, the specification teaches: [0052] "The control device 20 is formed from: gas flow-control means 21 controlling the mass-flow controllers 11, 12 to adjust the flow of gas supplied by the gas cylinders 9, 10 to the etching chamber 2a; coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means 22 controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) 16; and base power controlling means 23 controlling the high-frequency power applied to the base 3. " Ishii ('942) teaches: The control device (56; Figure 1; column 5; lines 32-42) is formed from: gas flow-control means (56, 37-42, 44-47; Figure 1; column 5; lines 13-43) controlling the mass-flow controllers (39, 40, 46, and 47; Figure 1; column 5; lines 13-43) to adjust the flow of gas supplied by the gas cylinders (41, 42; Figure 1; column 5; lines 13-17) to the etching chamber (2; Figure 1); coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (56, 7, 8, 6, 6a,b; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) (6, 6a,b; Figure 1; column 3, lines 51-57); and base power controlling means (56, 24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power (24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) applied to the base (4; Figure 1; column 3, lines 36-50). As such, Ishii ('942) teaches an equivalent apparatus that performs the function of means for generating plasma. As a result, Ishii

(‘942)’s prior art elements of (see above) for means for generating plasma perform the identical function of means for generating plasma in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183) – claim 15

- v. means for applying high-frequency electrical base (4; Figure 1; column 3, lines 36-50) power to said base (4; Figure 1; column 3, lines 36-50). Support for this portion of claim is found in section [0052]. Specifically, the specification teaches: [0052] “The control device 20 is formed from: gas flow-control means 21 controlling the mass-flow controllers 11, 12 to adjust the flow of gas supplied by the gas cylinders 9, 10 to the etching chamber 2a; coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means 22 controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) 16; and base power controlling means 23 controlling the high-frequency power applied to the base 3. “ Ishii (‘942) teaches: The control device (56; Figure 1; column 5; lines 32-42) is formed from: gas flow-control means (56, 37-42, 44-47; Figure 1; column 5; lines 13-43) controlling the mass-flow controllers (39, 40, 46, and 47; Figure 1; column 5; lines 13-43) to adjust the flow of gas supplied by the gas cylinders (41, 42; Figure 1; column 5; lines 13-17) to the etching chamber (2; Figure 1); coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (56, 7, 8, 6, 6a,b; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) (6, 6a,b; Figure 1; column 3, lines 51-57); and base power controlling means (56, 24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power (24;

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Figure 1; column 5; lines 13-43; column 3, lines 51-57) applied to the base (4; Figure 1; column 3, lines 36-50). As such, Ishii ('942) teaches an equivalent apparatus that performs the function of means for applying high-frequency "electrical base". As a result, Ishii ('942)'s prior art elements of (see above) for means for applying high-frequency "electrical base" perform the identical function of means for applying high-frequency "electrical base" in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183) – claim

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- vi. means for controlling gas flow of said etching gas and said protective film forming gas supplied to said etching chamber (2; Figure 1) by said etching gas supplying means (see above) and said protective film forming gas supplying means (see above). Support for "means for controlling gas flow" is found in section [0052]. Specifically, the specification teaches: [0052] "The control device 20 is formed from: gas flow-control means 21 controlling the mass-flow controllers 11, 12 to adjust the flow of gas supplied by the gas cylinders 9, 10 to the etching chamber 2a; coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means 22 controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) 16; and base power controlling means 23 controlling the high-frequency power applied to the base 3. " Ishii ('942) teaches: The control device (56; Figure 1; column 5; lines 32-42) is formed from: gas flow-control means (56, 37-42, 44-47; Figure 1; column 5; lines 13-43) controlling the mass-flow controllers (39, 40, 46, and 47; Figure 1; column 5; lines 13-43) to adjust the flow of gas supplied by the gas cylinders (41, 42; Figure 1; column 5; lines 13-17) to the etching

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chamber (2; Figure 1); coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (56, 7, 8, 6, 6a,b; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) (6, 6a,b; Figure 1; column 3, lines 51-57); and base power controlling means (56, 24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power (24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) applied to the base (4; Figure 1; column 3, lines 36-50). As such, Ishii ('942) teaches an equivalent apparatus that performs the function of "means for controlling gas flow". As a result, Ishii ('942)'s prior art elements of (see above) for "means for controlling gas flow" perform the identical function of "means for controlling gas flow" in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183) – claim 15

- vii. means for controlling electrical coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58) in said plasma generating means (see above). Support for "means for controlling electrical coil power" is found in section [0052]. Specifically, the specification teaches: [0052] "The control device 20 is formed from: gas flow-control means 21 controlling the mass-flow controllers 11, 12 to adjust the flow of gas supplied by the gas cylinders 9, 10 to the etching chamber 2a; coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means 22 controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) 16; and base power controlling means 23 controlling the high-frequency power applied to the base 3. " Ishii ('942) teaches: The control device (56; Figure 1; column 5; lines 32-42) is

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formed from: gas flow-control means (56, 37-42, 44-47; Figure 1; column 5; lines 13-43) controlling the mass-flow controllers (39, 40, 46, and 47; Figure 1; column 5; lines 13-43) to adjust the flow of gas supplied by the gas cylinders (41, 42; Figure 1; column 5; lines 13-17) to the etching chamber (2; Figure 1); coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (56, 7, 8, 6, 6a,b; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) (6, 6a,b; Figure 1; column 3, lines 51-57); and base power controlling means (56, 24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power (24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) applied to the base (4; Figure 1; column 3, lines 36-50). As such, Ishii ('942) teaches an equivalent apparatus that performs the function of "means for controlling electrical coil power". As a result, Ishii ('942)'s prior art elements of (see above) for "means for controlling electrical coil power" perform the identical function of "means for controlling electrical coil power" in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183) – claim 15

- viii. means for controlling electrical power applied to said base (4; Figure 1; column 3, lines 36-50) by said high-frequency electrical base (4; Figure 1; column 3, lines 36-50) power applying means (see above). Support for "means for controlling electrical power applied to said base" is found in section [0052]. Specifically, the specification teaches: [0052] "The control device 20 is formed from: gas flow-control means 21 controlling the mass-flow controllers 11, 12 to adjust the flow of gas supplied by the gas cylinders 9, 10 to the

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etching chamber 2a; coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means 22 controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) 16; and base power controlling means 23 controlling the high-frequency power applied to the base 3. “Ishii ('942) teaches: The control device (56; Figure 1; column 5; lines 32-42) is formed from: gas flow-control means (56, 37-42, 44-47; Figure 1; column 5; lines 13-43) controlling the mass-flow controllers (39, 40, 46, and 47; Figure 1; column 5; lines 13-43) to adjust the flow of gas supplied by the gas cylinders (41, 42; Figure 1; column 5; lines 13-17) to the etching chamber (2; Figure 1); coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (56, 7, 8, 6, 6a,b; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power applied to the coil (6, 6a,6b; Figure 1; column 3; lines 51-58) (6, 6a,b; Figure 1; column 3, lines 51-57); and base power controlling means (56, 24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) controlling the high-frequency power (24; Figure 1; column 5; lines 13-43; column 3, lines 51-57) applied to the base (4; Figure 1; column 3, lines 36-50). As such, Ishii ('942) teaches an equivalent apparatus that performs the function of “means for controlling electrical power applied to said base”. As a result, Ishii ('942)'s prior art elements of (see above) for “means for controlling electrical power applied to said base” perform the identical function of “means for controlling electrical power applied to said base” in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183) – claim 15

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- ix. wherein said gas flow controlling means (see above) is formed so that said protective film forming gas is continuously supplied to said etching chamber (2; Figure 1) and said etching gas is intermittently supplied to said etching gas, as claimed by claim 1 – Applicant’s claims to gas identities as “etching gas” and “protective film forming gas” are claim requirements of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).
- x. A device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) according to claim 15, wherein said gas flow controlling means (See Above) supplies a large amount of said protective film forming gas (gas identity is intended use in apparatus claims, See Above) to said etching chamber (2; Figure 1) when said etching gas (gas identity is intended use in apparatus claims, See Above) is not being supplied and a small amount of said protective film forming gas (gas identity is intended use in apparatus claims, See Above) to said etching chamber (2; Figure 1) when said etching gas (gas identity is intended use in apparatus claims, See Above) is being supplied, as claimed by claim 16 – Applicant’s claimed process dynamics (Figure 2), in the pending apparatus claims, is believed to be an inherent attribute of Ishii (‘942)’s apparatus. When the

structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

- xi. A device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) according to claim 15, wherein said electrical base (4; Figure 1; column 3, lines 36-50) power controlling means (See Above) periodically changes said electrical power applied to said base (4; Figure 1; column 3, lines 36-50), applying low electrical power to said base (4; Figure 1; column 3, lines 36-50) when said etching gas (gas identity is intended use in apparatus claims, See Above) is not being supplied and applying high electrical power when said etching gas (gas identity is intended use in apparatus claims, See Above) is being supplied, as claimed by claim 17. Applicant's claimed process dynamics (Figure 2), in the pending apparatus claims, is believed to be an inherent attribute of Ishii ('942)'s apparatus. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).
- xii. A device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) according to claim 15, wherein said electrical coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (See Above) periodically changes power applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58), applying low electrical power when said etching gas (gas identity is intended use in apparatus claims, See Above) is not being supplied and applying high electrical power when said etching gas (gas identity is intended use in apparatus claims, See Above) is being supplied, as claimed by claim 18.

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Applicant's claimed process dynamics (Figure 2), in the pending apparatus claims, is believed to be an inherent attribute of Ishii ('942)'s apparatus. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

- xiii. A device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) comprising: an etching chamber (2; Figure 1) for housing a silicon substrate (W; Figure 1) serving as an item to be etched; a base (4; Figure 1; column 3, lines 36-50) disposed below (compare with Applicant's Figure 1) said etching chamber (2; Figure 1) and on which said silicon substrate (W; Figure 1) is mounted means (See Above) for supplying an etching gas (gas identity is intended use in apparatus claims, See Above) to said etching chamber (2; Figure 1); means (See Above) for supplying a protective film forming gas (gas identity is intended use in apparatus claims, See Above) to said etching chamber (2; Figure 1); means (See Above) for reducing pressure in said etching chamber (2; Figure 1); means (See Above) for generating plasma, including a coil (6, 6a,6b; Figure 1; column 3; lines 51-58) opposing said etching chamber (2; Figure 1), wherein high-frequency electrical power (7) is applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58), and the etching gas (gas identity is intended use in apparatus claims, See Above) and the protective film forming gas (gas identity is intended use in apparatus claims, See Above) supplied to said etching chamber (2; Figure 1) are converted to plasma; means (See Above) for applying high-frequency electrical base (4; Figure 1; column 3, lines 36-50) power to said base (4; Figure 1; column 3, lines 36-50); means

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(See Above) for controlling gas flow of said etching gas (gas identity is intended use in apparatus claims, See Above) and said protective film forming gas (gas identity is intended use in apparatus claims, See Above) supplied to said etching chamber (2; Figure 1) by said etching gas (gas identity is intended use in apparatus claims, See Above) supplying means (See Above) and said protective film forming gas (gas identity is intended use in apparatus claims, See Above) supplying means (See Above); means (See Above) for controlling electrical coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58) in said plasma generating means (See Above); and means (See Above) for controlling electrical power applied to said base (4; Figure 1; column 3, lines 36-50) by said high-frequency electrical base (4; Figure 1; column 3, lines 36-50) power applying means (See Above); wherein said gas flow controlling means (See Above) (See Above) is formed so that said etching gas (gas identity is intended use in apparatus claims, See Above) and said protective film forming gas (gas identity is intended use in apparatus claims, See Above) are continuously supplied to said etching chamber (2; Figure 1) while flows thereof are periodically changed, with said flows being controlled so that phases thereof are opposite of each other, as claimed by claim 19. Applicant's claimed process dynamics (Figure 2), in the pending apparatus claims, is believed to be an inherent attribute of Ishii ('942)'s apparatus. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

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- xiv. A device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) according to claim 19, wherein said electrical base (4; Figure 1; column 3, lines 36-50) power controlling means (See Above) periodically changes electrical power applied to said base (4; Figure 1; column 3, lines 36-50), applying low electrical power when a small amount of said etching gas (gas identity is intended use in apparatus claims, See Above) is being supplied and applying high electrical power to said base (4; Figure 1; column 3, lines 36-50) when a large amount of said etching gas (gas identity is intended use in apparatus claims, See Above) is being supplied, as claimed by claim 20. Applicant's claimed process dynamics (Figure 2), in the pending apparatus claims, is believed to be an inherent attribute of Ishii ('942)'s apparatus. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).
- xv. An device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) according to claim 19, wherein said electrical coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (See Above) periodically changes electrical power applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58), applying low electrical power when a small amount of said etching gas (gas identity is intended use in apparatus claims, See Above) is being supplied and applying a high electrical power when a large amount of said etching gas (gas identity is intended use in apparatus claims, See Above) is being supplied, as claimed by claim 21. Applicant's claimed process dynamics (Figure 2), in the pending apparatus claims, is believed to be an inherent attribute of Ishii ('942)'s

apparatus. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

- xvi. A device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) comprising: an etching chamber (2; Figure 1) for housing a silicon substrate (W; Figure 1) serving as an item to be etched; a base (4; Figure 1; column 3, lines 36-50) disposed below (compare with Applicant's Figure 1) said etching chamber (2; Figure 1) and on which said silicon substrate (W; Figure 1) is mounted; means (See Above) for supplying an etching gas (gas identity is intended use in apparatus claims, See Above) to said etching chamber (2; Figure 1); means (See Above) for supplying a protective film forming gas (gas identity is intended use in apparatus claims, See Above) in said etching chamber (2; Figure 1); means (See Above) for reducing pressure in said etching chamber (2; Figure 1); means (See Above) for generating plasma, including a coil (6, 6a,6b; Figure 1; column 3; lines 51-58) and opposing said etching chamber (2; Figure 1), wherein high-frequency electrical power is applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58), and the etching gas (gas identity is intended use in apparatus claims, See Above) and the protective film forming gas (gas identity is intended use in apparatus claims, See Above) supplied to said etching chamber (2; Figure 1) are converted to plasma; means (See Above) for applying high-frequency electrical base (4; Figure 1; column 3, lines 36-50) power to said base (4; Figure 1; column 3, lines 36-50); means (See Above) for controlling gas flow of said etching gas (gas identity is intended use in apparatus claims, See Above) and said protective film forming gas (gas identity is

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intended use in apparatus claims, See Above) supplied to said etching chamber (2; Figure 1) by said etching gas (gas identity is intended use in apparatus claims, See Above) supplying means (See Above) and said protective film forming gas (gas identity is intended use in apparatus claims, See Above) supplying means (See Above); means (See Above) for controlling electrical coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58) in said plasma generating means (See Above); and means (See Above) for controlling electrical base (4; Figure 1; column 3, lines 36-50) power applied to said base (4; Figure 1; column 3, lines 36-50) by said high-frequency electrical base (4; Figure 1; column 3, lines 36-50) power applying means (See Above); wherein said electrical base (4; Figure 1; column 3, lines 36-50) power controlling means (See Above) is formed so that said electrical power applied to said base (4; Figure 1; column 3, lines 36-50) is periodically changed, as claimed by claim 22. Applicant's claimed process dynamics (Figure 2 – "electrical power applied to said base is periodically changed"), in the pending apparatus claims, is believed to be an inherent attribute of Ishii ('942)'s apparatus. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

- xvii. A device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) according to claim 22, wherein said means (See Above) for controlling electrical coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power periodically changes said electrical power applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58), as claimed by claim 23.

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Applicant's claimed process dynamics (Figure 2), in the pending apparatus claims, is believed to be an inherent attribute of Ishii ('942)'s apparatus. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

- xviii. A device (Figure 1; column 3, lines 28-35) for etching a silicon substrate (W; Figure 1) comprising: an etching chamber (2; Figure 1) for housing a silicon substrate (W; Figure 1) serving as an item to be etched; a base (4; Figure 1; column 3, lines 36-50) disposed below (compare with Applicant's Figure 1) said etching chamber (2; Figure 1) and on which said silicon substrate (W; Figure 1) is mounted; means (See Above) for supplying an etching gas (gas identity is intended use in apparatus claims, See Above) in said etching chamber (2; Figure 1); means (See Above) for supplying a protective film forming gas (gas identity is intended use in apparatus claims, See Above) in said etching chamber (2; Figure 1); means (See Above) for reducing pressure in said etching chamber (2; Figure 1); means (See Above) for generating plasma, including a coil (6, 6a,6b; Figure 1; column 3; lines 51-58) disposed at an outer perimeter of said etching chamber (2; Figure 1) and opposing said etching chamber (2; Figure 1), wherein high-frequency electrical power is applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58), and the etching gas (gas identity is intended use in apparatus claims, See Above) and the protective film forming gas (gas identity is intended use in apparatus claims, See Above) supplied to said etching chamber (2; Figure 1) are converted to plasma; means (See Above) for applying high-frequency electrical base (4; Figure 1; column 3, lines 36-50)

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power to said base (4; Figure 1; column 3, lines 36-50); means (See Above) for controlling gas flow of said etching gas (gas identity is intended use in apparatus claims, See Above) and said protective film forming gas (gas identity is intended use in apparatus claims, See Above) supplied to said etching chamber (2; Figure 1) by said etching gas (gas identity is intended use in apparatus claims, See Above) supplying means (See Above) and said protective film forming gas (gas identity is intended use in apparatus claims, See Above) supplying means (See Above); means (See Above) for controlling electrical coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58) in said plasma generating means (See Above); and means (See Above) for controlling electrical base (4; Figure 1; column 3, lines 36-50) power applied to said base (4; Figure 1; column 3, lines 36-50) by said high-frequency electrical base (4; Figure 1; column 3, lines 36-50) power applying means (See Above); wherein said electrical coil (6, 6a,6b; Figure 1; column 3; lines 51-58) power controlling means (See Above) is formed so that electrical power applied to said coil (6, 6a,6b; Figure 1; column 3; lines 51-58) is periodically changed, as claimed by claim 24. Applicant's claimed process dynamics (Figure 2 – "so that electrical power applied to said coil is periodically changed"), in the pending apparatus claims, is believed to be an inherent attribute of Ishii ('942)'s apparatus. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

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Ishii ('942) does not teach means for generating plasma, including a coil (6, 6a,6b; Figure 1; column 3; lines 51-58) disposed at an outer perimeter of said etching chamber (2; Figure 1) – claim 15, 19, 22, and 24

Ishii ('657) teaches a similarly controlled (77; Figure 16) inductively coupled plasma etching reactor (Figure 16; column 12; lines 10-35) including a coil (125; Figure 16) disposed at an outer perimeter of said etching chamber (2; Figure 16) – claim 15, 19, 22, and 24.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Ishii ('942) to add Ishii's ('657) coil (125; Figure 16) disposed at an outer perimeter of said etching chamber (2; Figure 16).

Motivation for Ishii ('942) to add Ishii's ('657) coil (125; Figure 16) disposed at an outer perimeter of said etching chamber (2; Figure 16) is for "a plasma can be excited also from the side wall portion of the processing chamber " as taught by Ishii ('657: column 12; lines 28-34).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 20050130436 A1

US 6532796 B1

US 6514376 B1

US 6454898 B1

US 6444085 B1

US 6350347 B1

US 6165311 A

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US 6095083 A

US 6074518 A

US 6074512 A

US 6068784 A

US 6063233 A

US 6024826 A

US 5935373 A

US 5919332 A

US 5571366 A

US 5494522 A

US 5368685 A

US 5077875 A

US 5068002 A

US 4500408 A

JP 2003092286 A

WO 2004112120 A1

WO 2004086478 A1

WO 3030239 A1

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry

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of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

Parviz Hassanzadeh
4/28/06